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(54) A transportable installation for mixing concrete.

(57) A transportable installation for mixing concrete, provided with a chassis consisting of at least two portions, some components of the proper installations being accommodated in said chassis portions.

The chassis comprises parallelepiped-shaped frames (1, 2, 21; 1, 24, 27) which are transportable independently from each other and interconnectable at the building site, the external shape and sizes of said frames being equal to those of a container for freight traffic and all necessary components of a concrete supply station being accommodated in the frames.

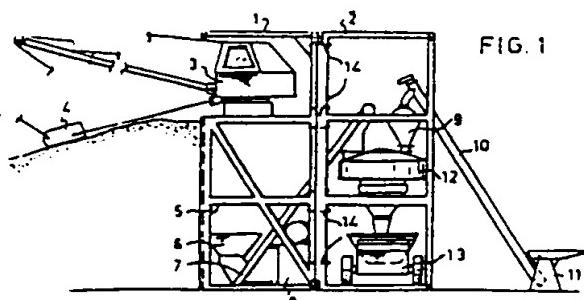


FIG. 1

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A transportable installation for mixing concrete.

The present invention relates to a transportable installation for mixing concrete, provided with a chassis consisting of at least two portions, some components of the proper installation being accommodated in said chassis portions.

Such an installation is known from Dutch patent application 76.04126. Said known installation is embodied in the shape of a trailer which can be brought on the building site with a tractor. The trailer consists of a two-part chassis, said chassis portions being pivotally interconnected, in which the portions are aligned in the transport position and in the operative position the one front portion can be located at right angles or almost at right angles to the other rear portion and then both portions together can serve as a mixing installation. In said known transportable installation always a tractor is needed to transport the installation. Furthermore one or more sets of wheels should be mounted beneath the rear chassis portion and the installation is in fact restricted to transport by road. When transporting the installation by ship the advantage of easy transportability is lost and moreover the costs for transport are higher in that case. During transport of the installation both portions of the chassis

should be fixedly and rigidly interconnected, to avoid deformation of the chassis and/or the installation and moreover the bottom clearance between the bottom of the chassis and the road is restricted. Finally in the known installation a provision is missing in the chassis portions 5 for the storage and the supply of cement to the mixing installation, so that the known installation cannot be considered as a transportable complete concrete supply station.

The object of the present invention is to remove the objections of said known installation.

10 This object is achieved, by that according to the invention the chassis comprises parallelepiped-shaped frames which are transportable independently from each other and interconnectable at the building site, the external shape and size of said frames being equal to those of a container for freight traffic and in that all necessary components 15 of a concrete supply station are accommodated in the frames.

By application of these features an installation is obtained which can be transported much easier, as one is not committed to the fact, that the installation should be transported as a whole at the same time. As the frames with their shape and sizes satisfy the international shape and sizes determined for containers, the frames with the 20 components of the installation can be transported independently from each other by container truck, train, ship or even with a container plane, with which it is not necessary to take precautions to fix the frames with respect to each other. Thereby the costs for transport can 25 be held very low. At the destination the frames, which are transported in horizontal condition, can be erected by means of a crane and can be easily interconnected, after which after effecting the connections between the components the installation is ready for operation. Because 30 all necessary components for a concrete supply station are provided in the frames, it is not necessary to make separate provisions for arranging a fixed cement container or cement bunker next to the installation. This means, that also the building costs of the concrete supply station at the building site can be reduced to a minimum. The same counts for

making the concrete supply station ready for transport.

In a preferred embodiment of the installation, in which in the first chassis portion a weighing box for the additions sand and gravel, a weighing device for the filled weighing box, and at least a part of a conveyor for the weighing box have been accommodated and in the second chassis portion the other part of the weighing box conveyor, a cement dosage hopper and a mixing device for the additions sand and gravel and the cement have been accommodated, according to the invention also a digging machine with dragging bucket is disposed in the first frame, whereas in the operative condition of the installation at the free side of the first frame a storage for the additions sand and gravel is formed on the site, on which the installation is placed, and in the second frame a cement conveyor coupled with the cement dosage hopper is mounted and the installation is provided with a third frame, in which a cement container is accommodated, which can be coupled with the cement conveyor.

With the installation according to the invention the necessary materials can be brought via a dosage device in the weighing box by means of the digging machine disposed in the first frame. When starting the activities, when the level of the stored materials is high enough, the material automatically flows into the weighing box via the dosage devices. The cement container disposed in the third frame can be directly coupled with the cement dosage hopper on the mixing device by the cement conveyor, so that the supply of cement can take place automatically. Because the cement hopper is provided with a cement conveyor coupled therewith the cement can also be supplied to the mixing device by arranging a platform at the supply end of the conveyor, said platform comprising a grid at the upper side, on which grid cement bags can be opened.

In the known installation according to Dutch patent application 76.04126 containers of compartments for the additions have been formed in the rear chassis portion. These materials should first be brought from a storage into said containers with a device which is not accommodated in the installation. As said containers are provided in the rear

chassis portion and at a small distance above the land level, a hole must be dug in the ground and shored for the weighing box, with which the additions should be poured into the mixing device, so that said materials can be brought from the containers into the weighing box by means of gravity. In the installation according to Dutch patent application 76.04126 only a cement dosage hopper is disposed inserted in the front chassis portion, said hopper being mounted at the top of the mixing device. Therewith a separate cement bunker, which is not accommodated in one of the chassis portions, is mounted on a non-displaceable, carrier tower built next to the installation said cement bunker must be connected to the cement dosage hopper with a cement conveyor which is neither accommodated in the installation.

In the installation according to the invention for mixing concrete the second and/or the third frame can be mounted at a higher level than the first frame. Thereby it is possible to drive a so-called truck mixer beneath the mixing device in the second frame and to fill it from the mixing device.

The invention will be further elucidated on the basis of the drawings with a pair of schematically reproduced embodiments.

Fig. 1 is a side view of a first embodiment of the installation according to the invention.

Fig. 2 is a plan view of the installation according to fig. 1.

Fig. 3 is a front view of the installation according to fig. 1.

Fig. 4 is a side view of a second embodiment of the installation according to the invention.

Fig. 5 is a plan view of the installation according to fig. 4.

Fig. 6 is a front view of the installation according to fig. 4.

Fig. 7 is a side view of a third embodiment of the installation according to the invention, and

Fig. 8 is a side view of the transport of the installation according to the invention on trucks for containers.

The transportable installation according to the invention for mixing concrete is, according to fig. 1 and 2, accommodated in two frames 1 and 2, the sizes of which correspond to those of containers

for freight traffic.

In the frame 1 are accommodated a digging machine 3 with a drag bucket 4, dosage devices 5, a weighing box 6, a portion of a weighing box conveyor 7 and an operation centre 8. Said operation centre 8 may 5 be mounted also completely or partially in the frame 2.

In the frame 2 are accommodated the other part of the weighing box conveyor 7, a cement dosage hopper 9 with a cement conveyor 10 coupled therewith, at its free end provided with a platform 11 with a grid, on which cement bags can be opened and emptied and a mixing 10 device 12 for the additions sand and gravel and for cement. In the operative condition of the installation a vehicle 13 with a tank for the produced concrete is driven beneath the mixing device 12 in the frame 2, with which the concrete can be brought to the discharging point.

The frames 1 and 2 in which the above components of the installation are accommodated, are brought to their destination in horizontal position on a container truck, by container ship, or by container train and/or with a container plane. There the frames 1 and 2 are unloaded 15 with a hoisting crane, subsequently erected in vertical position according to fig. 1 and then interconnected by means of bolts and nuts 14 or other mounting means. The two parts of the weighing box conveyor 7 are interconnected and the cement conveyor 10 with its platform 11, which can be accommodated in the frame 1 during transport, is connected to the cement dosage hopper 9 and the platform 11 is mounted.

At the free left side of the frame 1 a storage for sand and gravel (rough and fine) is formed, in which on the ground in front of the installation one or more bulk heads 15 and a partition 16 with shores 17 have been arranged, dividing the ground in two or more compartments 18, 19 and 20, in which said materials can be stored. By 20 means of the digging machine 3 and the drag bucket 14 it can be assured, that above the dosage devices 5 always sufficient material remains, so that the weighing box 7 via the dosage devices 5 can be filled by means of gravity.

The installation built-in in the frames 1 and 2 is completely

fitted with electrical wiring and with connections for current and for water. After the connections to the electricity network and the waterworks are effected, the transportable concrete supply station is ready for operation.

5 When the weighing box 6 is filled with the correct quantities of material, it is pulled upwardly along the weighing box conveyor 7 with an engine or a winch or in an other way toward the mixing device 12 and the contents of the weighing box are poured into the mixing device.

10 Bags of cement can be opened on the platform 11 and emptied there, after which the cement is brought into the mixing device 12 by means of the conveyor 10 and the cement dosage hopper 9, in which mixing device after supply of water concrete can be produced, which can be brought to the poaring location by means of the vehicle 13.

15 The operation of the installation according to the invention can be completely automatic according to a predetermined program. The various functions and processes of the installation can, however, also be started and stopped in the operation centre 8.

20 The installation according to the invention for mixing concrete according to the fig. 4, 5 and 6, is just like the embodiment according to the fig. 1 and 2, provided with frames 1 and 2, in which in the frame 1 the digging machine 3 with drag bucket 4, the dosage devices 5, the weighing box 6, the first part of the weighing box conveyor 7 and in the frame 2 the second part of the weighing box conveyor 7, the operation centre 8, the cement dosage hopper 9 with the cement conveyor 10 and the mixing device 12 can be accomodated. The storage compartments 18, 19 and 20 are also formed in the same way, whereas the frames 1 and 2 are interconnected in the same way and the installation is coupled with the waterworks and the electrically network.

25 30 In the embodiment of the installation according to fig. 4, 5 and 6 a third frame 21 is mounted next to the second frame 2, said third frame being connected to the frame 2 by means of bars or beams or other profile members 22. In the frame 21 a cement bunker or cement container 23 is mounted and the cement conveyor 10 is connected to the lower end

of the cement container 23 by means of its supply end. In this way the supply of cement to the mixing device 12 can also take place automatically.

The operation of the installation according to fig. 4, 5 and 6 takes place in the same way as is described in the installation according to fig. 1, 2 and 3.

In fig. 7 a third embodiment of the installation according to the invention is shown, which is especially meant for filling so-called truck mixers. This installation is provided with a first frame 1, constructed and arranged in the same way as in the embodiment according to fig. 1 through 6. In the frame 1 are accommodated a digging machine 3 with drag bucket, dosage devices 5, a weighing box 6, a part of a weighing box conveyor 7 and an operation centre 8.

Next to the frame 1 a second frame 24 has been mounted at a higher level and for that reason is provided with legs 25, whereas the frame 24 is connected to the frame 1 by means of bars, beams or other connecting members 26. In the frame 24 just like in the frame 2 of the embodiment according to fig. 1 through 6, the other part of the weighing box conveyor 7, a cement dosage hopper 9, a mixing device 12 and 1 cement conveyor 10 are accommodated.

Next to the frame 24 at the same level a third frame 27 has been mounted on legs 28 and is connected to the frame 24 by means of bars, beams or other connecting members 29. In the frame 27 a cement hopper 30 has been disposed connected to the supply end of the cement conveyor 10 at its lower end.

Because the frames 24 and 27 are mounted on legs 25 and 28 respectively, a truck mixer 31 can be driven beneath the mixing device 12 and be filled therefrom.

The operation of the installation according to fig. 7 corresponds to that of the installation according to fig. 1 through 3 and 4 through 6. In the installation according to fig. 7 the concrete produced in the mixing device 12 is poured into the truck mixer 31.

Fig. 8 shows the transport of the transportable installation according to the invention for producing concrete, for instance the

installation according to the fig. 4, 5 and 6, by means of container trucks. The transport can, however, also take place in the same easy and cheap manner with container trains, ships and planes.

The displaceable installation according to the invention for producing concrete is particularly, but not exclusively, meant for application in small and average building sites, in which the costs of a stationary concrete supply station should press too strongly upon the work. The installation according to the invention can be set up by two man in about 10 hours by means of a hoisting crane and after finishing 10 the work it can be made ready for transport in the same time.

CLAIMS

1. A transportable installation for mixing concrete, provided with a chassis consisting of at least two portions, some components of the proper installation being accommodated in said chassis portions, characterized in that the chassis comprises parallelepiped-shaped frames (1, 2, 21; 1, 24, 27) which are transportable independently from each other and interconnectable at the building site, the external shape and sizes of said frames being equal to those of a container for freight traffic and that all necessary components of a concrete supply station are accommodated in the frames.

10 2. Installation according to claim 1, in which in the first
chassis portion a weighing box for the additions sand and gravel, a
weighing device for the filled weighing box, and at least a part of
a conveyor for the weighing box have been accommodated and in the second
chassis portion the other part of the weighing box conveyor, a cement
dosage hopper and a mixing device for the additions sand and gravel and
the cement have been accommodated, characterized in that in the first
frame (1) also a digging machine (3) with drag bucket (4) is disposed,
whereas in the operative condition of the installation at the free side
of the first frame a storage (18, 19, 20) for the additions sand and
20 gravel is formed on the site, on which the installation is placed, that
in the second frame (2, 24) a cement conveyor (10) coupled with the
cement dosage hopper (9) is mounted and that the installation is provided
with a third frame (21, 27) in which a cement container (30) is accommo-
dated, which can be coupled with the cement conveyor.

25 3. Installation according to claim 2, characterized in that the
second (24) and/or the third frame (27) are disclosed at a higher level
than the first frame (1) by means of legs (25 and 28 respectively).

4. A transportable installation for mixing concrete, particularly a transportable concrete supply station, substantially as described
30 in the specification and/or indicated in the drawing.

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FIG. 1

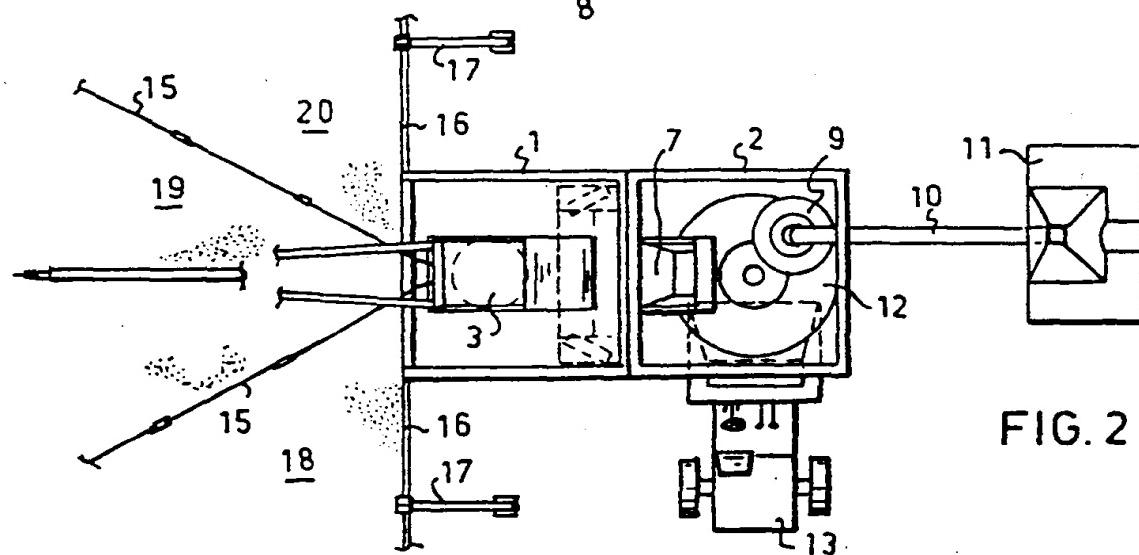
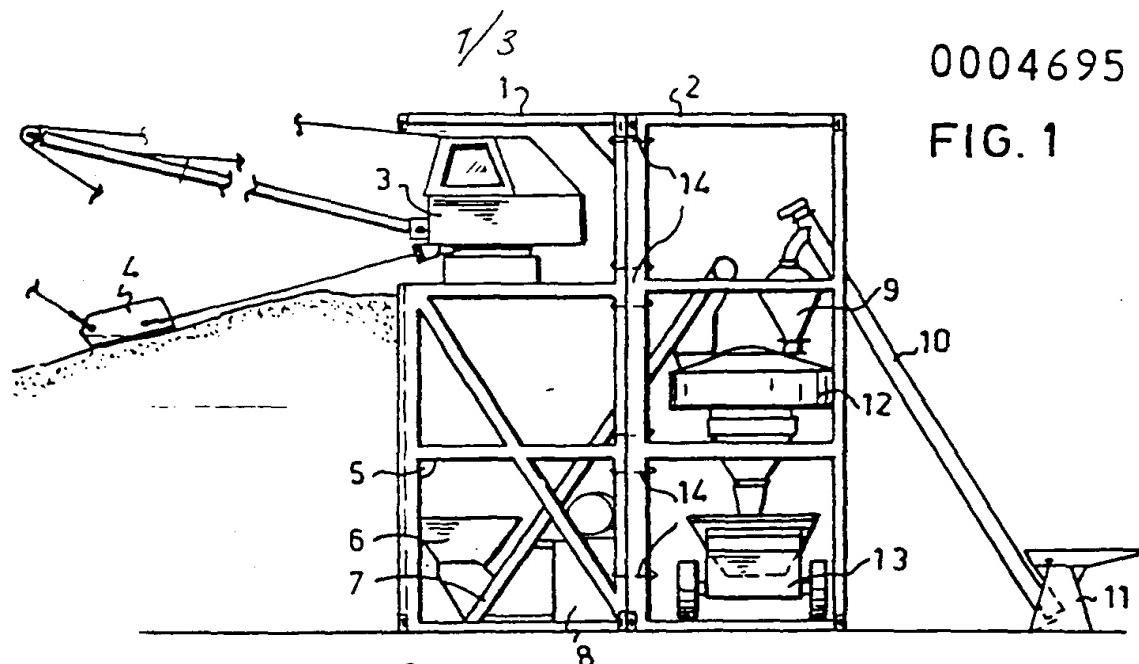
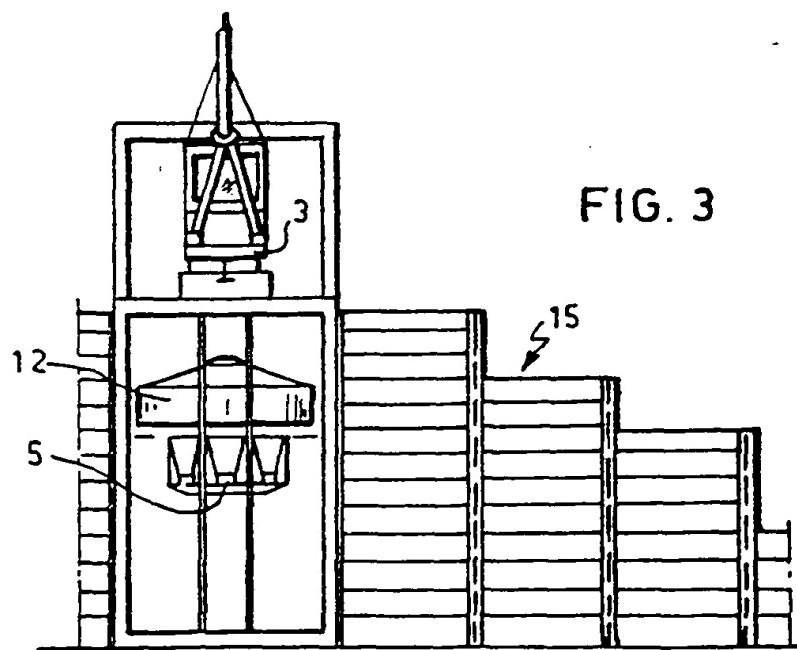


FIG. 2



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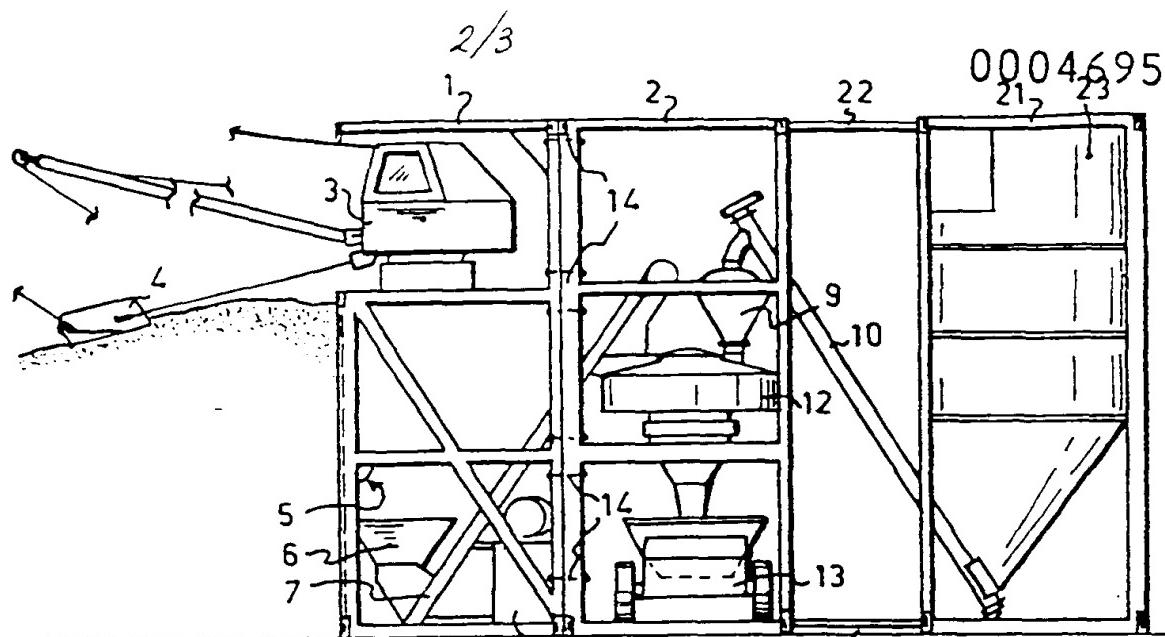


FIG. 4

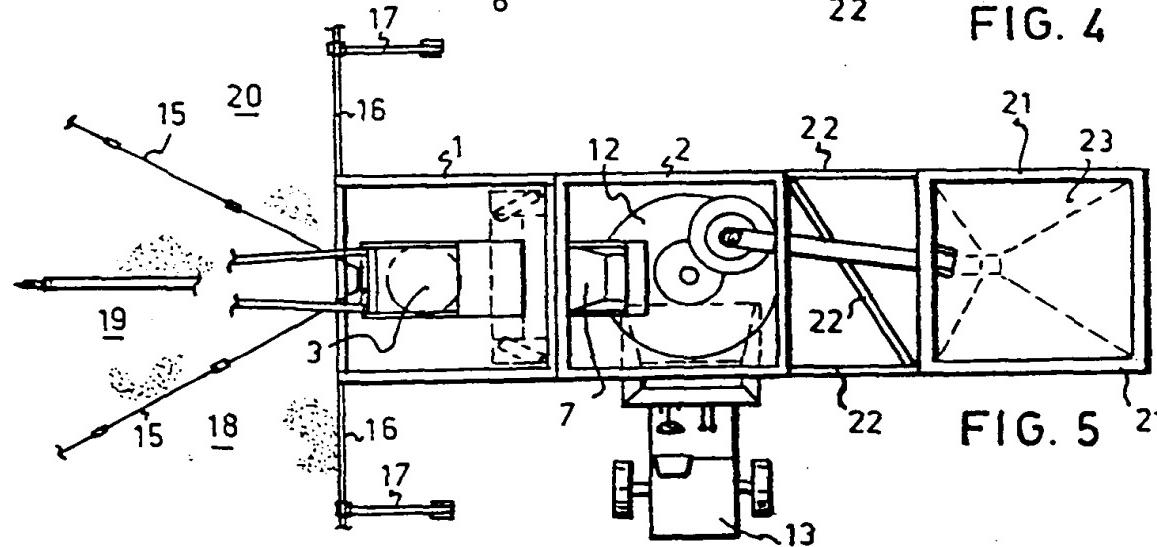


FIG. 5 2

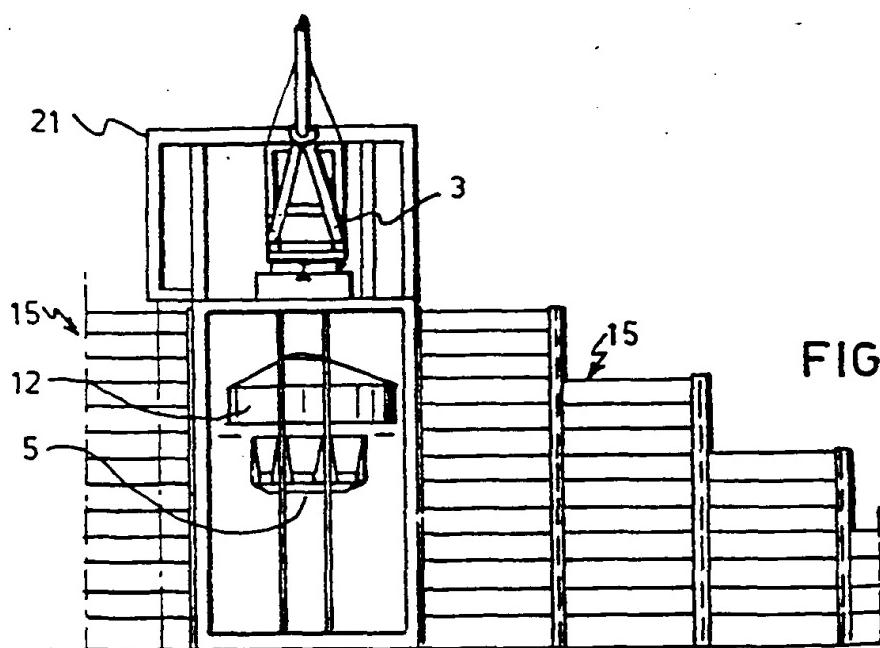


FIG. 6

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